

CLAIMS

I claim:

- 5           1. A method comprising:
- receiving a single hardware I/O control block  
            by a host adapter integrated circuit wherein said  
            host adapter integrated circuit interfaces two I/O  
10           buses and further wherein said single hardware I/O  
            control block specifies a write data transaction  
            for a first data storage device; and  
            analyzing said single hardware I/O control  
            block by said host adapter integrated circuit to  
            determine whether information in said single  
15           hardware I/O control block specifies a mirrored  
            write data transaction for a second data storage  
            device.
2. The method of Claim 1 wherein said analyzing  
20           said single hardware I/O control block further  
            comprises:
- determining, by said host adapter integrated  
            circuit, whether an entry in a first mirror  
            hardware I/O control block field of said single  
25           hardware I/O control block is valid.
3. The method of Claim 2 further comprising:
- generating, by said host adapter integrated  
            circuit, a second hardware I/O control block upon  
30           determining said entry in said first mirror  
            hardware I/O control block field is valid wherein  
            said second hardware I/O control block specifies  
            said mirrored write data transaction for said  
            second data storage device.
- 35           4. The method of Claim 3 further comprising:

executing said first hardware I/O control block and said second hardware I/O control block independently by said host adapter integrated circuit.

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5. The method of Claim 4 further comprising:  
posting as complete only a last of said first and second hardware I/O control blocks to complete executing.

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6. The method of Claim 2 further comprising:  
executing said first hardware I/O control block by said host adapter integrated circuit as a non-mirrored write data transaction upon  
15 determining said entry in said first mirror hardware I/O control block field is invalid.

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7. A method comprising:  
receiving a single hardware I/O control block  
20 by a host adapter integrated circuit wherein said single hardware I/O control block specifies a write data operation for a first data storage device and includes a sister hardware I/O control block field; and

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25 generating another hardware I/O control block by said host adapter integrated circuit upon said sister hardware I/O control block field containing a valid hardware I/O control block identification number wherein said another hardware I/O control  
30 block specifies said write data operation for a second data storage device so that said write data transaction is mirrored.

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8. The method of Claim 7 wherein said valid  
35 hardware I/O control block identification number is a

pointer to a storage site in an array of hardware I/O control block storage sites.

5           9. The method of Claim 7 further comprising:  
          placing a hardware I/O control block  
          identification number of said single hardware I/O  
          control block in a sister hardware I/O control  
          block field of said another hardware I/O control  
          block.

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          10. The method of Claim 7 wherein said another  
hardware I/O control block includes a sister hardware  
I/O control block field, and said method further  
comprises:

15           placing a null hardware I/O control block  
          identification number in said sister hardware I/O  
          control block field of said single hardware I/O  
          control block upon completion of execution of said  
          another hardware I/O control block prior to  
20           completion of execution of said single hardware  
          I/O control block.

          11. The method of Claim 7 wherein said another  
hardware I/O control block includes a sister hardware  
25           I/O control block field, and said method further  
          comprises:

          placing a null hardware I/O control block  
          identification number in said sister hardware I/O  
          control block field of said another hardware I/O  
30           control block upon completion of execution of said  
          single hardware I/O control block prior to  
          completion of execution of said another hardware  
          I/O control block.

35           12. The method of Claim 7 further comprising:

reporting completion of execution of only one of said single hardware I/O control block and said another hardware I/O control block.

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            reporting completion of execution of said  
            single hardware I/O control block only if said  
            sister hardware I/O control block field of said  
            single hardware I/O control block contains a  
10           predefined value.
14. The method of Claim 7 further comprising:  
            reporting completion of execution of said  
            another hardware I/O control block only if said  
15           sister hardware I/O control block field of said  
            another hardware I/O control block contains a  
            predefined value.
15. A method comprising:  
20           receiving a single hardware I/O control block  
            by a host adapter integrated circuit wherein said  
            single hardware I/O control block specifies a  
            write data operation for a first data storage  
            device and includes a sister hardware I/O control  
25           block field;  
            generating another hardware I/O control block  
            by said host adapter integrated circuit upon said  
            sister hardware I/O control block field containing  
            a valid hardware I/O control block identification  
30           number wherein said another hardware I/O control  
            block specifies said write data operation for a  
            second data storage device so that said write data  
            transaction is mirrored;  
            placing a hardware I/O control block  
35           identification number of said single hardware I/O  
            control block in a sister hardware I/O control

block field of said another hardware I/O control block;

5 placing a null hardware I/O control block identification number in said sister hardware I/O control block field of one of said single hardware I/O control block and another hardware I/O control block upon completion of execution of a different one of said single hardware I/O control block and said another hardware I/O control block wherein  
10 said different one is a first to complete execution; and

reporting completion of execution of only one of said single hardware I/O control block and said another hardware I/O control block.

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16. A structure comprising:

a memory containing processor instructions for a host adapter mirroring process, wherein upon execution of said processor instructions said host adapter mirroring process comprises:

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receiving a single hardware I/O control block by a host adapter integrated circuit wherein said host adapter integrated circuit interfaces two I/O buses and further wherein  
25 said single hardware I/O control block specifies a write data transaction for a first data storage device; and

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analyzing said single hardware I/O control block by said host adapter integrated circuit to determine whether information in  
30 said single hardware I/O control block specifies a mirrored write data transaction for a second data storage device.

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35 17. A structure comprising:

a memory containing processor instructions for a host adapter mirroring process, wherein upon execution of said processor instructions said host adapter mirroring process comprises:

5           receiving a single hardware I/O control  
          block by a host adapter integrated circuit  
          wherein said single hardware I/O control  
          block specifies a write data operation for a  
          first data storage device and includes a  
10           sister hardware I/O control block field; and  
          generating another hardware I/O control  
          block by said host adapter integrated circuit  
          upon said sister hardware I/O control block  
          field containing a valid hardware I/O control  
15           block identification number wherein said  
          another hardware I/O control block specifies  
          said write data operation for a second data  
          storage device so that said write data  
          transaction is mirrored.

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18. A hardware I/O control block structure stored in a memory, said hardware I/O control block structure comprising:

25           a sister hardware I/O control block field; and  
          a target identification field.

19. The hardware I/O control block structure stored in a memory as in Claim 18 wherein said hardware I/O control block structure is one of a plurality of  
30 hardware I/O control block structures in said memory.

20. A hardware I/O control block memory array comprising:

35           a first hardware I/O control block having a  
          sister hardware I/O control block field; and

a second hardware I/O control block having a sister hardware I/O control block field wherein said sister hardware I/O control block field of said first hardware I/O control block includes a pointer to said second hardware I/O control block and said sister hardware I/O control block field of said second hardware I/O control block includes a pointer to said first hardware I/O control block.

21. A method comprising:

using, in a host system, a single hardware I/O command block structure for both non-mirrored and mirrored transactions for a plurality of storage devices coupled to said host system by a host adapter;

setting a mirror field in said single hardware I/O command block structure to a valid value for a mirrored transaction; and

setting said mirror field in said single hardware I/O command block structure to an invalid value for a non-mirrored transaction.